

AMENDMENTS TO THE CLAIMS

1. (currently amended) A system for detecting radiation phenomena in an area surrounding a wellbore traversing an earth formation, comprising:
an elongated support member adapted for disposal within said wellbore;
~~multiple a~~ radiation detector[[s]] mounted on said support member;~~and~~
~~at least one of said radiation detector[[s]] being disposed within another radiation detector~~
having a wire centrally disposed therein and extending along a longitudinal axis
of the detector to detect radiation; and
said radiation detector having multiple wires disposed therein surrounding the central
wire and extending along the detector longitudinal axis to detect radiation;
wherein said centrally disposed and surrounding wires are adapted to simultaneously
provide multiple different types of radiation phenomena measurements.
2. (canceled)
3. (original) The system of claim 1, further comprising a radiation source mounted on said support member.
4. (currently amended) The system of claim 1, wherein the ~~at least one~~ radiation detector ~~providing multiple types of radiation phenomena measurements~~ is adapted to detect neutron related phenomena.
5. (original) The system of claim 1, wherein said support member is adapted for disposal within said wellbore during or after drilling of said wellbore.
6. (original) The system of claim 3, wherein the radiation source comprises a controllable neutron source adapted to emit selected duration bursts of high-energy neutrons.
7. (original) The system of claim 3, wherein the radiation source comprises an x-ray source.
8. (original) The system of claim 1, further comprising a marker material adapted for disposal within the wellbore or the formation, said material being naturally radioactive or capable of being made radioactive when bombarded with neutrons.

9. (currently amended) The system of claim 1, wherein the ~~at least one detector providing multiple types of radiation phenomena measurements~~ is adapted to provide azimuthal sensitivity about said support member.
10. (currently amended) The system of claim 9, wherein the ~~at least one~~ detector comprises a plurality of scintillation material segments joined together.
11. (canceled)
12. (currently amended) The system of claim 9, wherein the ~~at least one~~ detector comprises a plurality of scintillation material segments coupled to a multiplier adapted to convert light to electron signals.
- 13-18. (canceled)
19. (currently amended) The system of claim ~~14~~, wherein the ~~at least one detector providing multiple types of radiation phenomena measurements~~ is adapted to detect thermal or epithermal neutrons.
20. (currently amended) The system of claim 1, wherein the ~~at least one detector providing multiple types of radiation phenomena measurements~~ is adapted to detect gamma rays.
21. (currently amended) A method for detecting radiation phenomena in an area surrounding a wellbore traversing an earth formation, comprising:
disposing a support member within said wellbore, said support member having ~~multiple a~~ radiation detector[[s]] mounted thereon, ~~at least one of said radiation detectors being disposed within another radiation detector~~ said radiation detector having a wire centrally disposed therein and extending along a longitudinal axis of the detector to detect radiation, and multiple wires disposed therein surrounding the central wire and extending along the longitudinal axis to detect radiation, wherein said centrally disposed and surrounding wires are adapted to simultaneously provide multiple different types of radiation phenomena measurements; and
detecting radiation phenomena with said radiation detector ~~providing multiple types of radiation phenomena measurements~~.

22. (canceled)
23. (currently amended) The method of claim 21, wherein the ~~at least one detector providing multiple types of radiation phenomena measurements~~ is adapted to detect neutron related phenomena.
24. (original) The method of claim 21, wherein said radiation detecting step comprises detecting gamma ray related phenomena.
25. (original) The method of claim 21, wherein said support member comprises a radiation source disposed thereon.
26. (original) The method of claim 25, wherein said radiation source comprises a neutron source.
27. (original) The method of claim 26, further comprising irradiating the formation or wellbore with neutrons from said neutron source.
28. (original) The method of claim 21, wherein said support member is disposed within said wellbore during drilling of said wellbore.
29. (original) The method of claim 21, wherein said support member is disposed within said wellbore after drilling of said wellbore.
30. (original) The method of claim 26, wherein said neutron source is adapted to emit selected duration bursts of high-energy neutrons.
31. (original) The method of claim 21, further comprising disposing a marker material within the wellbore or formation, said material being naturally radioactive or capable of being made radioactive when bombarded with neutrons.
32. (currently amended) The method of claim 21, wherein the ~~at least one detector providing multiple types of radiation phenomena measurements~~ is adapted to provide azimuthal sensitivity about said support member.

33. (currently amended) The method of claim 32, wherein the ~~at least one detector providing multiple types of radiation phenomena measurements~~ comprises a plurality of scintillation material segments joined together.
34. (canceled)
35. (currently amended) The method of claim 32, wherein the ~~at least one detector providing multiple types of radiation phenomena measurements~~ comprises a plurality of scintillation material segments coupled to a multiplier adapted to convert light to electron signals.
- 36-41. (canceled)
42. (currently amended) The method of claim 21, wherein the ~~at least one detector providing multiple types of radiation phenomena measurements~~ is adapted to detect thermal or epithermal neutrons.
43. (currently amended) The method of claim 21, wherein the ~~at least one detector providing multiple types of radiation phenomena measurements~~ is adapted to detect gamma rays.